



Understanding the Mystery of Survey Sample Sizes

What size sample is enough?

Mystery truly abounds when the conversation turns to a discussion about the appropriate sample size for a survey. There are two common misconceptions that far outpace all others. The first is that there is a *minimum* number of people who must participate in a survey before the results can be considered valid. The second potential trap is that a proper sample size is proportionate to the population being studied (e.g., a sample size of 5% of the population). Let's take a look at both of these and dispell the misunderstanding that surrounds them.

One of the first questions asked when developing a project concept plan is how large a sample is needed for a "valid" survey. The prevailing myth is that there is some number above which a survey is considered sound and anything short of that number leaves the study meaningless. The reality is that there is no magic sample size that gives a survey its legitimacy.

The size of the sample relates more to how *accurate* the survey results will be - or stated another way, how much error is acceptable. A larger sample size leads to more precision in the findings while a smaller sample size equates to less precision. So, when asked how large a sample is needed for a given survey, the question is actually met with another question - How precise do the survey results need to be?

Typically, surveys reported by the news media are constructed with precision levels that range from $\pm 3\%$ (higher precision) to $\pm 6\%$ (lower precision), or what is generally referred to as the *margin of error*. Studies with a margin of error of $\pm 3\%$ will involve the participation of about 1,200 respondents. Surveys with a higher margin of error, say $\pm 6\%$, will include fewer respondents - normally around 300. Both surveys are considered valid. It is just that the study with a sample size of 1,200 respondents carries more precision in the findings than the survey that sampled only 300 respondents (all other things being equal, of course).

The other primary misconception about sample sizes concerns the myth of proportionality. It is understandable to reason that if a sample of 500 respondents is needed to attain a certain level of precision in a city of 100,000 people, then a sample of 5,000 is required for a city of 1,000,000 people to achieve the same level of precision (a magnitude of 10 for the size difference in both the population and the sample). The truth of the matter is that proportionality has nothing to do with how large a sample to draw. Rather, it is all in the arithmetic - a mathematical equation that takes into consideration the desired level of precision, the amount of variability in the population and, to some extent, the size of the population being studied.

The result of applying numbers to the equation reveals that as the population increases, the size of the appropriate sample levels off. For example, a population of 500 requires a sample of 217 respondents to achieve a margin of error of $\pm 5\%$. A population of 1,000 needs 278 members of the sample for the same level of precision of $\pm 5\%$. But as the population continues to increase, a noticeable leveling occurs. A population of 10,000 calls for a sample size of 370, while a population that numbers 100,000 needs a sample of 383 respondents. A city the size of Los Angeles requires only 384 respondents to take part in a survey to attain the same margin of error of $\pm 5\%$.

There are a couple of lessons to be learned here. First, a survey can generally have as large or as small a sample as resources permit and still be considered an authoritative study. The point to remember is that greater confidence in the findings comes from the survey that utilizes a larger sample. The other lesson is that once a population reaches about 2,000 in number, the sample size needed to achieve a given level of precision changes very little.

Survey Tip

After determining the appropriate sample size, do not forget to estimate the response rate. Surveys rarely result in 100% participation, so a sample larger than the desired final sample size must be drawn. If, for instance, the study calls for a sample size of 500 completed questionnaires and the expected response rate is 50%, the sample pool should consist of 1,000 individuals ($500 \div 50\% = 1,000$).

Did you know...

A FOX News poll finds a disparity in the public's concern over bird flu and the government's readiness to respond to the virus. Sixty-three percent of Americans are either very or somewhat concerned about the spread of the bird flu, while just over a third (35%) think the government is very or somewhat prepared to deal with a potential outbreak.

Opinions are similar concerning which poses the greater threat - terrorists or birds. Thirty-two percent are more concerned about being the victim of a terrorist attack, while 29% are more concerned about catching the flu.

Source: Opinion Dynamics

A survey of holiday buying intentions reveals that consumers intend to spend slightly more this holiday season than last year. This is in spite of higher gas and oil prices and other negative economic indicators. On average, consumers plan to spend \$681 this season compared to \$655 last year.

The survey shows that the most popular items will be clothing, toys, movies (DVD and VHS), electronics and technology, and books. Gift cards will also play a key role this holiday season.

Source: The NPD Group

Comments, suggestions and questions related to survey research should be directed to Doug Cox - (919)733-2083, extension 626.